UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/612,168	07/03/2003	Norikazu Arai	2860.0637-05	4165

22852 7590 08/11/2004

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP
1300 I STREET, NW
WASHINGTON, DC 20005

EXAMINER	
CHU, KIM KWOK	

ART UNIT	PAPER NUMBER
2653	

DATE MAILED: 08/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/612,168	ARAI ET AL.	
	Examiner	Art Unit	
	Kim-Kwok CHU	2653	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *Amendment filed on 7/3/04*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *137-150* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *137-145,147,149 and 150* is/are rejected.

7)☒ Claim(s) *146 and 148* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 09/487,928.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 3/19/04
4) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. ~~7/30/2004~~ 7/29/04
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

> *A person shall be entitled to a patent unless --*
> *(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by applicant for patent*

2. Claims 137-143 and 150 are rejected under 35 U.S.C. § 102(e) as being anticipated by Chung et al. (U.S. Patent 6,442,124).

Chung teaches an optical pickup apparatus for recording/reproducing information for an optical recording medium having all the elements and means as recited in claims 137-143 and 150. For example, Chung teaches the following:

(a) as in claim 137, a first light source 25 configured to emit a first light flux having a first wavelength (410 nm) for recording and/or reproducing a second information recording medium provided with a transparent substrate (Fig. 1; the second medium is the HD-DVD; column 4, lines 3-25);

(b) as in claim 137. a second light source 35 configured to emit a second light flux having a second wavelength (650 nm) longer than the first wavelength, for recording and/or reproducing the first information recording medium (DVD)

provided with a transparent substrate (Fig. 1; the first recording medium is the DVD column 4, lines 3-25);

(c) as in claim 137, a third light source 45 configured to emit a third light flux having a third wavelength (780 nm) longer than the second wavelength, for recording and/or reproducing the third information recording medium (CD) provided with a transparent substrate having a thickness thicker than that of each of the first and second information recording mediums (Fig. 1; CD is thicker than a HD-DVD and DVD);

(d) as in claim 137, an objective lens 60 configured to converge the first, second and third light fluxes onto the second, first, and third optical information recording mediums respectively (Fig. 1);

(e) as in claim 137, when recording and/or reproducing information is conducted for the second information recording medium (HD-DVD), the first light flux (410 nm) emitted from the first light source 25 enters the objective lens 60 as a parallel light flux and is converged on the second information recording medium (Fig. 1);

(f) as in claim 137, when recording and/or reproducing information is conducted for the first information recording medium (DVD), the second light flux (650 nm) emitted from the second light source 35 enters the objective lens 60 as a

parallel light flux and is converged on the first information recording medium (Fig. 1);

(g) as in claim 137, when recording and/or reproducing information is conducted for the third information recording medium (CD), the third light flux (780 nm) emitted from the third light source 45 enters the objective lens 60 as a parallel light flux and is converged on the third information recording medium (Fig. 1);

(h) as in claim 138, the first light flux having the first wavelength is a blue laser beam (Fig. 1; 410 nm is in a blue laser range);

(i) as in claim 139, the second optical information recording medium is a next-generation high density optical disk which information is recorded on and/or reproduced from with the blue laser beam (Fig. 1; HD-DVD is a next-generation high density optical disk);

(j) as in claim 140, the thickness of the transparent substrate of the first optical information recording medium (DVD) is equal to that of the second information recording medium (HD-DVD) (Fig. 1; column 6, lines 44-46);

(k) as in claim 141, when NA2 is an image side numerical aperture of the objective lens necessary for recording and/or reproducing information for the first optical information medium (DVD), NA1 is an image side numerical aperture of the

objective lens necessary for recording and/or reproducing information for the second Optical information medium (HD-DVD), and NA3 is an image side numerical aperture of the objective lens necessary for recording and/or reproducing information for the third optical information medium (CD), NA1 and NA2 are larger than NA3 (Fig. 1; column 1, lines 43-55);

(l) as in claim 142, the NA1 is equal to NA2 (Fig. 1, NA1 is 0.6 for a DVD and NA2 is also 0.6 for a HD-DVD);

(m) as in claim 143, when recording and/or reproducing information is conducted for the third optical information recording medium, a spherical aberration of a light flux having passed through a region of the objective lens having a numerical aperture larger than NA3 (0.45 for a CD) is flare (aberration) on the third optical information recording medium (Fig. 1; objective lens with NA1 such as 0.6 creates a spherical aberration); and

(n) as in claim 150, the objective lens 60 is a single lens (Fig. 1).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> *(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.*

4. Claims 144, 145 and 147 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chung (U.S. Patent 5,6442,124) in view of Maruyama ((U.S. Patent 6,191,889).

Chung teaches an optical pickup apparatus having elements and means very similar to that of the instant invention. However, Chung does not teach the following:

(a) as in claim 144, the objective lens comprises a ring-shaped diffractive surface;

(b) as in claim 145, the objective lens comprises an aspherical refractive surface and a ring-shaped diffractive surface; and

(c) as in claim 147, the ring-shaped diffractive surface is designed by a phase difference function in which a coefficient of the second power term is not zero and a

coefficient of a term other than the second power term is not zero.

Maruyama teaches the following:

(a) an objective lens 10 comprises a ring-shaped diffractive surface 11 (Fig. 1A-1C; column 4, lines 31-34); and

(b) the objective lens 10 comprises an aspherical refractive surface and a ring-shaped diffractive surface (Fig. 1A-1C; column 4, lines 31-34); and

(c) the ring-shaped diffractive surface is designed by a phase difference function in which a coefficient P2 of the second power term is not zero and a coefficient P4 of a term other than the second power term is not zero (column 4, lines 59-67).

An objective lens creates aberration when it focuses a light beam with frequency variation. To compensate the aberration, it would have been obvious to one of ordinary skill in the art to replace Chung's objective lens with Maruyama's objective lens having diffractive rings with the phase difference function , because the gratings of the diffractive rings according to the phase difference function counterbalance the aberration due to the light beam's wavelength shift.

5. Claim 149 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chung (U.S. Patent 6,442,124) in view of Maruyama ((U.S. Patent 6,191,889) and Nomura et al. (U.S. Patent 5,936,782).

Chung in view of Maruyama teach an optical pickup apparatus having elements and means very similar to that of the instant invention. However, both Chung and Maruyama does not teach the following:

(a) as in claim 149, a collimator to make a light flux from a light source to a parallel light flux to entrance into the objective lens.

Nomura teaches the following:

(a) a collimator 6 to make a light flux from a light source 1 to a parallel light flux to entrance into the objective lens 7 (Fig. 1).

An objective lens requires a parallel light beam so that it can be properly focused. In this case, although Chung's optical pickup does not disclose that his objective lens focuses a parallel light beam, however, to reduce focusing error, it would have been obvious to one of ordinary skill in the art to use a collimator such as Nomura's to collimate Chung's light beam before it is being focused, because the collimator will convert a divergent shaped light beam to a parallel shaped light beam before it is being focused.

Allowable Subject Matter

6. Claims 146 and 148 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is an Examiner's statement of reasons for the indication of allowable subject matter:

As in claims 146, the prior art of record fails to teach or fairly suggest that an optical pickup device having the following feature:

(a) the aspherical refractive surface and the ring-shaped diffractive surface correct spherical aberrations due to difference in wavelength among the first, second and third fluxes and spherical aberrations due to difference in thickness of the transparent substrate among the first, second and third optical information mediums.

As in claims 148, the prior art of record fails to teach or fairly suggest that an optical pickup device having the following feature:

(a) the spherical aberrations due to different wavelength among the first, second and third light fluxes are corrected by a combination of a refractive power and a diffractive power of the objective lens.

The features indicated above, in combination with the other elements of the claims, are not anticipated by, nor made obvious over, the prior art of record.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ju (6,324,150) is pertinent because Ju teaches an optical pickup having three laser sources.

Chung (6,023,449) is pertinent because Chung teaches a numerical aperture for both HD-DVD and DVD is 0.6.

Tsuchiya et al. (5,917,791) is pertinent because Tsuchiya teaches an optical head which can read three kinds of different disks.

9. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks Washington, D.C. 20231 Or faxed to:

(703) 872-9306 (for formal communications intended for entry. Or:

(703) 746-6909, (for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2021 Crystal Drive, Arlington. VA., Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-4700.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kim CHU whose telephone number is (703) 305-3032 between 9:30 am to 6:00 pm, Monday to Friday.

KC 7/30/04

Kim-Kwok CHU
Examiner AU2653
July 30, 2004

(703) 305-3032

A. J. HEINZ
PRIMARY EXAMINER
GROUP ~~2500~~ 2653

A. J. Heinz